Remarks

Applicant respectfully requests reconsideration of this application as amended.

Claims 1, 3-5, 7, 8, 14, 18, 21, 24, 30, 33, 37, 40, 43, 45, 48, 51, 55, 58, and 60 have been

amended. No claims have been cancelled or added. Therefore, claims 1, 3-8, 10-12, 14-

15, 18, 20-22, 24-25, 30-31, 33-34, 37-38, 40-41, 43-46, 48-49, 51-52, 55-56, 58, and 60-

62 are presented for examination.

35 U.S.C. §112 Rejection

Claims 1, 14, 18, 21, 33, 43, 45, 51, and 58 and their dependent claims stand

rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement

requirement. Specifically, the Office Actions claims that the feature of "aggregating the

difference between the first image and the second image into a noise feature vector" is

not described in the specification in such a way as to enable one skilled in the art to

which it pertains. Claims 1, 14, 18, 21, 33, 43, 45, 51, and 58 have been amended and no

longer refer to the aggregation feature. As such, applicant respectfully requests that the

35 U.S.C. §112 rejection be withdrawn.

35 U.S.C. §101 Rejection

Claims 21, 24, 30, 45, 48, 51, and 55 stand rejected under 35 U.S.C. §101 because

the claimed invention is directed to non-statutory subject matter. More specifically, the

Office Action claims that the "software means" is non-statutory subject matter. Claims

21, 24, 30, 45, 48, 51, and 55 have been amended and no longer refer to a "software

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means". Therefore, applicant respectfully requests that the 35 U.S.C. §101 rejection be withdrawn.

35 U.S.C. §103(a) Rejection

Claims 1-6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over "Distinguishing photographers and graphics on the world wide web", by Athitsos, IEEE 1997, in view of Zhang et al. (U.S. Patent No. 5,491,627). Applicant submits that the present claims are patentable over Athitsos in view of Zhang.

Athitsos discloses an automated system that distinguishes photographs and graphics on the World Wide Web. Recognition tests are originated from statistical observations about the differences between computer-generated graphics and photographs that appear on the Web. Based on these observations, Athitsos creates image metrics, which are functions based on images. The image metrics are expressed in terms of real numbers, known as "metric scores". In order to achieve high recognition accuracy, Athitsos combines scores from several metrics. (Athitsos at pg. 10, Introduction.)

Furthermore, the Athitsos system uses learning to create decision trees, which specify how to combine the various metric scores of an image in order to classify it (Id. at pg. 11, col.1, ll. 2-9 & ll. 13-19). Athitsos observes that graphics tend to have fewer colors than photographs. The score of the image for the prevalent color metric is the fraction of pixels that have that color. Photographs contain noise that causes even nearby pixels to have different colors (RGB values) (Id. at pg. 11, col. 2, ll. 4-8), resulting in a lower color metric score for photographs as compared to graphics.

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Zhang discloses the detection of microcalcifications in digital mammograms. First, regions-of-interest (ROIs) are selected from digital mammograms using a well-known computer-aided diagnosis device (CAD). Then, the ROIs are background-trend-corrected, optionally Fourier-transformed into the frequency domain, and then scaled for input into a neural network trained to detect microcalcifications. (Zhang at Abstract).

Claim 1, as amended, recites:

A method to train image classification, comprising:
measuring noise in a first image;
generating a noise-reduced second image from the first image;
calculating a difference between the first image and the second image;
generating a pixel histogram of the difference to use as a noise feature vector; and
training a classification model from the noise feature vector to classify a third image as a natural image versus an artificial image from noise in the third image.

Applicant submits that Athitsos does not disclose or suggest generating a pixel histogram of the difference to use as a noise feature vector and training a classification model from this noise feature vector, as recited by claim 1. The Examiner states that Athisos "fails to disclose generating of noise reduced third image by subtraction of two images." (Final Office Action mailed 9/28/05 at pg. 4.) If Athitsos fails to disclose generating a noise-reduced image, then Athitsos also cannot disclose or suggest generating a pixel histogram of a difference between a first image and this noise-reduced image and training a classification model from a noise feature vector created from this pixel histogram.

Furthermore, Zhang does not disclose or suggest generating a pixel histogram of the difference to use as a noise feature vector and training a classification model from this noise feature vector. Zhang does disclose producing a signal-enhanced image and a

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signal-suppressed image that are input to a signal differencer to produce an image difference. (Zhang at col. 5, ll. 9-20.) However, there is no disclosure or suggestion in Zhang of generating a pixel histogram of this image difference to use as a noise feature vector and training a classification model from this noise feature vector.

Therefore, as neither Athitsos nor Zhang disclose or suggest generating a pixel histogram of the difference to use as a noise feature vector and training a classification model from this noise feature vector, any combination of Athitsos and Zhang also would not disclose or suggest such a feature. As a result, claim 1 and its dependent claims are patentable over Athitsos in view of Zhang.

Claims 7-8, 10-12, 14-15, 18, 20-22, 24-25, 30-31, 33-34, 37-38, 40-41, 43-46, 48-49, 51-52, 55-56, 58, and 60-62 stand rejected for the same reasons set forth in the rejection of claims 1-6, because claims 7-8, 10-12, 14-15, 18, 20-22, 24-25, 30-31, 33-34, 37-38, 40-41, 43-46, 48-49, 51-52, 55-56, 58, and 60-62 are claims similar subject matter as claimed in claims 1-6.

Independent claims 14, 18, 21, 33, 43, 45, 51, and 58 include similar features as claim 1, and as a result are also patentable over Athitsos in view of Zhang for the reasons discussed above. Claims 15, 20, 22, 34, 44, 46, 52, and 60-62 depend from claims 14, 18, 21, 33, 43, 45, 51, and 58, respectively, and include additional limitations. Therefore, claims 15, 20, 22, 34, 44, 46, 52, and 60-62 are also patentable over Athitsos in view of Zhang.

Claim 7 recites training a classification model from a feature vector, the feature vector including at least one feature of an image selected from the group of at least one

text block feature, at least one edge-location feature, and at least one aspect ratio of an image. Athitsos' method distinguishes photographs from graphics by using a number of metrics. Zhang uses features to select the ROIs on the X-ray images. However, Athitsos and Zhang, taken alone or in combination, do not disclose or suggest distinguishing images by generating *a feature vector that comprises at least one feature of an image selected from the group consisting of at least one text block feature of the image, at least one edge-location feature of the image, and at least one aspect ratio of the image.* Claims 8 and 10 depend from claim 7 and include additional limitations. Therefore, claims 8 and 10 are also patentable over Athitsos in view of Zhang.

Independent claims 11, 24, 30, 37, 40, 48, and 55, and their corresponding dependent claims 10, 12, 25, 31, 38, 41, 49, and 56, include similar features as claim 7. Thus, for the reasons discussed above with respect to claim 7, Applicant respectfully submits that claims 11, 24, 30, 37, 40, 48, and 55 and their corresponding dependent claims, 12, 25, 31, 38, 41, 49, and 56, are also patentable over Athitsos in view of Zhang.

Applicant respectfully submits that the rejections have been overcome and that the claims are in condition for allowance. Accordingly, applicant respectfully requests the rejections be withdrawn and the claims be allowed.

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The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.
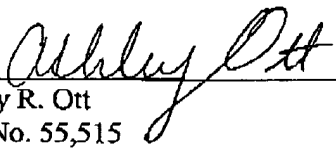
Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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Date: <u>December 13, 2005</u>

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